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ABSTRACT

Changing alcohol and drug use patterns among women and ethnic minorities, such as the over-representation of Hispanics in alcohol-related deaths, drunk driving arrests, and treatment facilities, emphasize the importance of understanding substance use patterns in these populations. This study attempted to identify a single cause of substance abuse by considering a wide range of potential risk and protective factors. Data from a large sample of Caucasian and Hispanic teens (117 Hispanic, 560 Caucasian) were collected on 12 factors associated with substance abuse. Scores were summed into a Protective Factor Index (PFI) and a Risk Factor Index (RFI). Bivariate and multivariate correlation analyses were used to examine the relationship of the RFI and PFI with cigarette, alcohol, cannabis, cocaine, and hard drug use. Across time, the PFI predicted frequency and quantity of alcoholic beverage use for White females. The RFI predicted quantity of alcohol use for Hispanic males and White females, and frequency of liquor use for White males. These indices accounted for significant percentages of drug use variance across all groups; however, the R-squared values were highest for Hispanic males and lowest for Caucasian males. The RFI and PFI can accommodate a seemingly diverse range of hypotheses about the cause of substance use/abuse and can be helpful in identifying populations at risk who would benefit from prevention/intervention programs. (References are included, and statistical tables and charts are appended.) (TE)

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Risk/Protective Factors for Alcohol Use Among Hispanic and White Teenagers

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Paper Presented for Western Psychological Association,
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Changing alcohol and drug use patterns among women and ethnic minorities, such as the over-representation of Hispanics in alcohol-related deaths, drunk driving arrests, and treatment facilities, emphasize the importance of understanding substance use patterns in these populations. Even the detailed and interactive models recently introduced may be limited in the range of influences that they can accomodate. This study overcomes the problem of attempting to identify a single cause of substance abuse by considering a wide range of potential risk and protective factors. Data from a large sample of white and hispanic teens were collected on 12 factors that have been associated with substance abuse. The lower 20% and upper 20% of the distribution for each factor were designated as either protective or risk. An individual was given a score of 1 or 0 depending on whether they fell in the areas for risk or protection in each distribution. These scores were summed into a Protective Factor Index (PFI) and a Risk Factor Index (RFI). Bivariate and multivariate correlation analyses were used to examine the relationship of the RFI and PFI with cigarette, alcohol, cannabis, cocaine, and hard drug use. The PFI was more strongly related to cigarette and alcohol use than was the RFI. On the other hand, the RFI was more strongly associated with illicit drug use than was the PFI. These indices accounted for significant percentages of drug use variance across all groups, however, the R-squared values were highest for Hispanic males and lowest for White males. A PFI and RFI can accomodate a seemingly diverse range of hypotheses about the cause of substance use/abuse and be useful in identifying populations at risk who would benefit from prevention/intervention programs.

Measures

Substance use measures. The dependent variables used for the analyses were three groups of frequency of use measures for each of five mutually exclusive drug categories: cigarettes, alcohol, cannabis, cocaine, and hard drugs. An additional dependent variable was a quantity measure of average daily alcohol intake. As in previous studies, alcohol and cigarettes were considered soft drugs (Newcomb et al., 1986) and, for this study, the alcohol category was further subdivided into beer, wine, and hard liquor, since some studies suggest that these may differ across the sexes and across ethnicity (Newcomb & Bentler, 198¶; Trotter, 1985).

Frequency of use in the past six months was assessed using a seven-point anchored scale with the following anchors: (1) never, (2) once or twice, (3) a few times, (4) once a month, (5) once a week, (6) once a day, (7) more than once a day. One item was included for cigarettes, three were averaged for alcohol (beer, wine, and hard liquor), two for cannabis (marijuana and hashish), one for cocaine, and 14 for the hard drug category (PCP, heroin, LSD, barbituates, amphetamines, etc.). Caffeine and tea were excluded since no clear pattern of loadings was found for these in previous studies (Maddahian et al., 1986).

Two groups of frequency measures yielded information about specific types of use. One set of items assessed excessive use of each of the substance categories over the last six months, a measure which taps into troublesome usage by considering both frequency and quantity. Excessive use, or being "super high," was defined as use which impaired usual functioning and memory. The second measure assessed frequency of use at school, usage which is more likely to be troublesome than social or recreational use outside of school in that it can seriously impair academic performance. Identical seven-point anchored rating scales were used for both excessive use and at school use measures with anchor points of (1) none, (2) 1-5 times, (3) 6-10 times, (4) 11-20 times, (5) 21-30 times, (6) 31-40 times, (7) more than 40 times.

In addition, subjects were asked to describe their average daily alcohol intake over the last six months. A seven-point anchored scale was used which ranged from 0 to 6 or more drinks.

Protective and risk factor measures. Fourteen factors were chosen for study, based on previous research (Bry et al., 1982; Kaplan, 1975; Mills & Noyes, 1984; Newcomb et al., 1986) and based on studies of the Hispanic culture (Caetano, 1987; Gilbert & Alcocer, 1988; Trotter, 1985) that have identified correlates or predictors of substance use and abuse.

Since certain factors may or may not contribute unique information in predicting substance use, multiple regressions of each factor with each of the 8 frequency measures were computed. Of the 14 original factors, only two were excluded, self-acceptance and perceived opportunity, because these were not significantly correlated with any of the dependent measures. Table 1 presents the regression weights of factors contributing to the general frequency measure of substance use based on the

fifth year data. Peer Use and Family/Community Support Of Use was associated with the frequency of drug use for every drug. Of all the factors, two factors were associated with frequency of drug use for only one drug. Home Relationships was associated only with cocaine use and Adult Use was associated only with cannabis use. The values for R-square ranged from .23 (wine) and .30 (cigarettes) to .55 (cannabis). All the factors taken together accounted for 51% of the variance for general alcohol use.

The upper 20.8% was designated as the risk factor, those who had committed 7 or more deviant acts. However, those who are more religious, the upper 18.3% of the distribution, were considered protected; the lower percentile were at risk. Since heavy drug use is an infrequent phenomenon, many individuals should have few or no risk factors (Newcomb et al., 1986). Similarly, complete abstention is rarely seen so many individuals will also have zero or few protective factors. For each variable, an individual was given either a score of one protective factor if the protective factor criterion was met or a score of zero if the criterion was not met. These scores were summed into a protective factor index ranging from 0 to 12. Using the risk factor criterion for each variable, similar scoring and summing procedures also yielded a risk factor index. Because so few subjects had a score higher than 8 for either index (Protective Factor Index, 2.9%; Risk Factor Index, 1.8%), the range of each index was truncated from 12 to >8.

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Table 1

Regression Weights for Factors Contributing to Frequency of Substance Use (General Measure) for Year 5

Factors	cig	beer	wine	liq	gen alc	can	coca	hrd drg
GPA	.13		-.05					
Educational Aspiration	-.07					-.05	-.05	
Perceived Opportunity								
Deviance		.07				.04	.10	.13
Law Abidance		-.23	-.15	-.18	-.23	-.15		
Religiosity		-.09			-.04		-.07	
Self-Acceptance								
Psychological State	.09			-.12	-.08			
Home relationships							.05	
Family/community support of use	.06	.14	.17	.16	.18	.10	.08	.07
Sanctions against use							-.09	-.06
Adult use						.06		
Peer use	.34	.31	.25	.39	.38	.54	.46	.46
Availability of drugs	-.02	.11	.08	.06	.10			
R^2	.30	.46	.23	.42	.51	.55	.37	.37
F-value*	25.72	53.41	18.72	45.64	65.15	77.40	37.57	36.58

*All F-values are significant with a probability $\leq .05$

Table 2

Two-Way ANOVAs of Drug Use Measures for Sex by Ethnicity

	Hispanic		Whites		F-values		
Variable	Males	Females	Males	Females	Race	Sex	RxS
Frequency of use over the last six months							
Cigarettes	2.41	2.54	2.13	2.62	0.16	1.68	0.57
Beer	2.84	2.84	3.52	2.88	4.01*	3.27	3.26
Wine	1.86	2.61	2.21	2.51	0.78	13.86***	2.61
Liquor	2.24	2.53	2.39	2.53	0.23	1.77	0.23
Alcohol	6.95	7.98	8.13	7.91	1.97	1.05	2.47
Cannabis	4.32	3.93	4.45	4.25	0.50	0.90	0.10
Cocaine	1.32	1.29	1.49	1.53	3.60	0.00	0.13
Hard Drugs	15.19	15.05	15.34	15.67	0.88	0.06	0.33
"Super High:"							
Beer	1.92	1.76	2.29	1.79	1.74	4.55*	1.24
Wine	1.24	1.48	1.36	1.50	0.61	4.04*	0.25
Liquor	1.65	1.84	1.80	1.76	0.08	0.37	0.83
Alcohol	4.81	5.08	5.45	5.05	0.95	0.04	1.08
Cannabis	3.65	3.24	3.73	3.36	0.13	1.99	0.00
Hard Drugs	6.35	6.41	6.31	6.47	0.00	0.46	0.09
High at school:							
Beer	1.59	1.18	1.46	1.19	0.58	17.13***	0.83
Wine	1.03	1.10	1.13	1.14	1.93	0.73	0.43
Liquor	1.32	1.18	1.26	1.19	0.17	2.63	0.35
Alcohol	3.95	3.45	3.84	3.51	0.02	5.84*	0.24
Cannabis	1.89	1.43	1.76	1.56	0.00	5.51*	0.85
Hard Drugs	1.16	1.06	1.10	1.21	0.43	0.00	2.29
Alcohol Quantity	3.03	2.83	3.26	2.71	0.06	2.76	0.59

*p≤.05 **p≤.01 ***p≤.001

Table 3

Two-Way ANOVAs for the Cumulative Protective and Risk Indices

	Hispanic		Whites		F-values		
Index	Males	Females	Males	Females	Race	Sex	RxS
Protective factor index	2.81	1.94	2.14	2.32	0.42	2.37	5.65*
Risk factor index	2.14	2.28	2.68	2.17	0.87	0.63	1.93

*$p \leq .05$

Table 4

Multiple Regression Analyses of the Protective and Risk Factor Indices for Different Dependent Measures for the Total Sample

Variable	PFI	RFI	R^2
Frequency of use over the last six months:			
Cigarettes	-.20***	.31***	.21***
Beer	-.35***	.34***	.37***
Wine	-.20***	.17***	.11***
Liquor	-.30***	.29***	.27***
Alcohol	-.35***	.33***	.36***
Cannabis	-.19***	.53***	.42***
Cocaine	-.08*	.48***	.28***
Hard Drugs	-.05	.46***	.24***
"Super High:"			
Beer	-.16***	.35***	.21***
Wine	-.08*	.25***	.09***
Liquor	-.14***	.38***	.22***
Alcohol	-.16***	.39***	.24***
Cannabis	-.08*	.51***	.32***
Hard Drugs	-.02	.40***	.17***
High at school:			
Beer	-.08*	.22***	.07***
Wine	-.04	.12**	.02***
Liquor	-.06	.28***	.10***
Alcohol	-.07*	.25***	.09***
Cannabis	-.07*	.49***	.27***
Hard Drugs	-.06	.30***	.11***
Alcohol Quantity:	-.36***	.22***	.26***

Note: The significance of R-squared is based on the F-value.
The significance of beta weights are based on the t-value.
***$p \leq .001$ **$p \leq .01$ *$p \leq .05$

Table 5

Multiple Regression Analyses of the Protective and Risk Factor Indices for Different Dependent Measures for Hispanics

	Hispanic Males			Hispanic Females		
Variables	PFI	RFI	R^2	PFI	RFI	R^2
Frequency of use over the last six months:						
Cigarettes	-.08	.25	.09	-.30**	.28**	.24***
Beer	-.56***	.20	.49***	-.36***	.30**	.32***
Wine	-.35*	-.07	.10	-.34***	.09	.16**
Liquor	-.39**	.32*	.41***	-.21*	.22*	.13**
Alcohol	-.52***	.20	.44***	-.37***	.26**	.29***
Cannabis	-.24*	.61***	.60***	-.21*	.47***	.36***
Cocaine	-.09	.43*	.24**	-.23*	.19	.13**
Hard Drugs	-.13	.50**	.34***	-.09	.50***	.30***
"Super High:"						
Beer	-.37*	.34*	.40***	-.22*	.29**	.19***
Wine	-.31	.05	.12	-.24*	.06	.07*
Liquor	-.29*	.41**	.39***	-.22*	.22*	.14**
Alcohol	-.37*	.36*	.43***	-.26*	.23*	.18***
Cannabis	-.02	.74***	.56***	-.04	.46***	.23***
Hard Drugs	.04	.63***	.37***	-.07	.46***	.24***
High at school:						
Beer	-.27	.46**	.43***	-.04	.40***	.17***
Wine	.05	.42*	.16	-.16	-.01	.02
Liquor	-.11	.65***	.52***	-.17	.32**	.18***
Alcohol	-.21	.62***	.58***	-.15	.35***	.20***
Cannabis	-.11	.71***	.60***	-.09	.42***	.22***
Hard Drugs	-.03	.35*	.14	.01	.45***	.20***
Alcohol Quantity:	-.56***	-.03	.30**	-.31***	.48***	.46***

Note: The significance of R-squared is based on the F-value.
The significance of beta weights are based on the t-value.
***p≤.001 **p≤.01 *p≤.05

Table 6

Multiple Regression Analyses of the Protective and Risk Factor Indices for Different Dependent Measures for Whites

	White Males			White Females		
Variables	PFI	RFI	R^2	PFI	RFI	R^2
Frequency of use over the last six months:						
Cigarettes	-.16**	.32***	.18***	-.21***	.35***	.25***
Beer	-.43***	.31***	.42***	-.31***	.35***	.34***
Wine	-.11	.13	.05**	-.18***	.27***	.16***
Liquor	-.24***	.25***	.19***	-.31***	.34***	.33***
Alcohol	-.34***	.30***	.32***	-.32***	.38***	.38***
Cannabis	-.20***	.50***	.39***	-.17***	.55***	.44***
Cocaine	-.09	.44***	.24***	-.05	.56***	.35***
Hard Drugs	.00	.54***	.29***	-.06	.45***	.23***
"Super High:"						
Beer	-.21**	.29***	.19***	-.11*	.39***	.21***
Wine	.05	.28***	.07**	-.06	.33***	.13***
Liquor	-.03	.35***	.13***	-.15**	.44***	.29***
Alcohol	-.11	.36***	.18***	-.13**	.45***	.29***
Cannabis	-.13*	.42***	.26***	-.07	.55***	.35***
Hard Drugs	-.01	.45***	.21***	-.01	.40***	.17***
High at school:						
Beer	-.14*	.12	.05**	-.04	.20***	.05***
Wine	-.08	.07	.02	.00	.17**	.03**
Liquor	-.04	.21**	.06**	-.05	.27***	.09***
Alcohol	-.11	.16*	.06**	-.04	.25***	.07***
Cannabis	-.09	.45***	.25***	-.05	.49***	.27***
Hard Drugs	-.04	.29***	.10***	-.07	.33***	.14***
Alcohol Quantity:	-.38***	.12	.22***	-.36***	.22***	.27***

Note: The significance of R-squared is based on the F-value.
The significance of beta weights are based on the t-value.
***p≤.001 **p≤.01 *p≤.05

Table 7

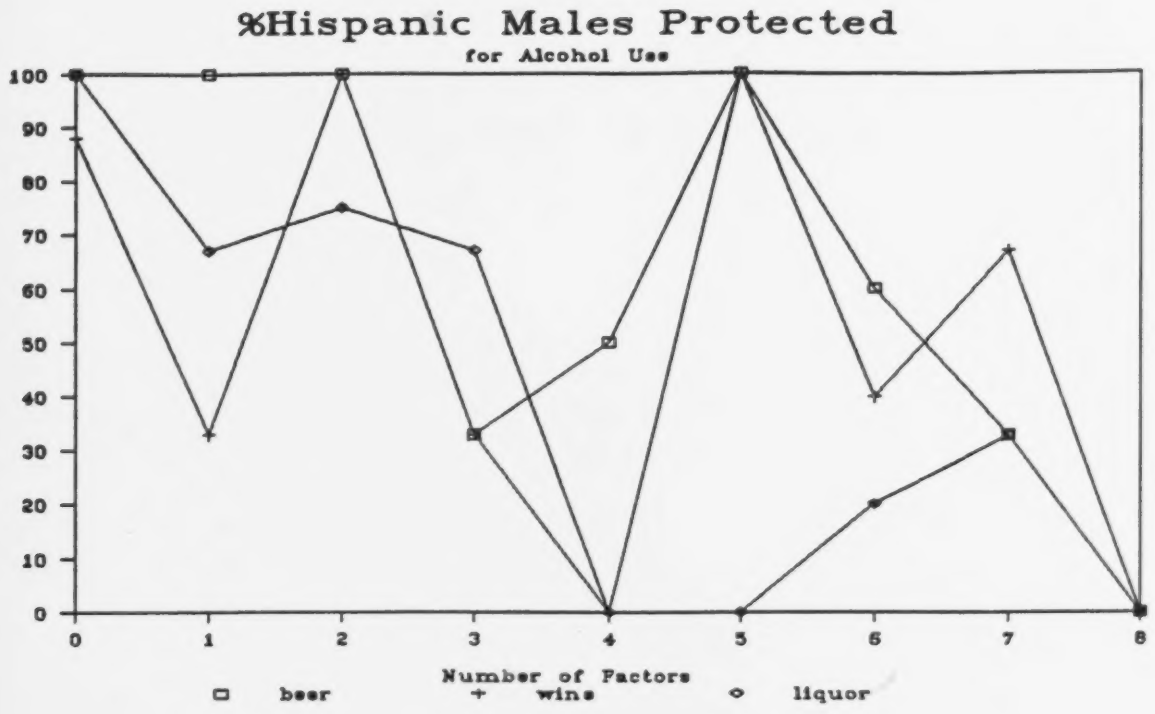
Percent of Sample Protected and at Risk for Use of Alcoholic Beverages

	Protective Factors					Risk Factors			
	Percent of Sample					Percent of Sample			
Number	HM	HF	AM	AF	Number	HM	HF	AM	AF
Beer									
0	87.5	84.2	79.1	85.4	0	37.5	57.9	48.5	47.2
1	100.0	90.5	80.0	77.7	1	80.0	75.0	73.6	57.1
2	100.0	83.4	85.8	65.1	2	71.5	73.3	83.3	77.1
3	33.4	73.4	82.2	70.6	3	80.0	88.9	92.6	76.2
4	50.0	50.0	78.5	41.2	4	100.0	100.0	73.9	88.5
5	100.0	0	28.5	30.7	5	50.0	80.0	60.0	80.0
6	60.0	33.3	50.0	41.7	6	0	83.3	77.8	91.7
7	33.3	0	20.0	37.5	7	100.0	0	87.5	92.9
>8	0	0	0	30.8	>8	100.0	50.0	83.3	50.0
Total	70.2	75.1	73.8	65.8		70.2	75.1	73.8	65.8
Wine									
0	87.5	100.0	67.5	82.9	0	50.0	52.6	48.4	57.5
1	33.4	76.2	64.5	72.5	1	50.0	87.5	61.8	62.0
2	100.0	75.0	60.0	77.8	2	57.2	66.7	66.7	77.1
3	33.4	73.3	60.6	76.5	3	40.0	88.9	59.2	78.6
4	0	75.0	42.8	55.9	4	50.0	100.0	65.2	94.3
5	100.0	0	64.3	50.0	5	50.0	80.0	53.3	76.0
6	40.0	66.6	50.0	58.3	6	0	83.3	77.7	75.0
7	66.7	0	60.0	37.5	7	100.0	0	75.0	85.7
>8	0	100.0	0	23.1	>8	100.0	100.0	50.0	75.0
Total	54.0	76.4	60.7	70.3		54.0	76.4	60.7	70.3
Liquor									
0	100.0	84.2	76.7	80.5	0	37.5	63.1	30.2	40.6
1	66.7	81.0	73.3	78.8	1	30.0	75.0	44.1	59.5
2	75.0	83.3	68.6	74.6	2	71.5	66.7	75.0	58.3
3	66.7	73.3	57.1	54.9	3	60.0	77.8	74.1	73.8
4	0	83.3	42.9	44.1	4	100.0	100.0	60.9	88.6
5	0	33.3	21.4	26.9	5	100.0	100.0	66.7	84.0
6	20.0	33.3	25.0	25.0	6	0	83.3	88.9	91.7
7	33.3	0	20.0	0	7	100.0	100.0	100.0	62.5
>8	0	0	0	7.7	>8				
Total	56.8	76.2	61.3	62.4		56.8	76.2	61.3	62.4

Table 8

Percent of Sample Protected and at Risk for Heavy Use of Alcoholic Beverages

Protective Factors					Risk Factors				
	Percent of Sample					Percent of Sample			
Number	HM	HF	AM	AF	Number	HM	HF	AM	AF
0	62.5	47.4	55.8	39.0	0	25.0	5.3	18.2	13.2
1	66.7	33.3	40.0	32.5	1	30.0	0	20.6	7.6
2	50.0	16.7	48.6	19.0	2	28.6	26.7	38.9	18.8
3	33.3	13.3	39.3	17.6	3	40.0	44.4	51.9	26.2
4	0	0	21.4	5.9	4	100.0	50.0	47.8	34.3
5	0	0	7.1	3.8	5	100.0	40.0	53.3	40.0
6	20.0	0	0	0	6	0	50.0	66.7	58.3
7	0	0	0	12.5	7	0	0	75.0	50.0
>8	0	0	0	0	>8	100.0	100.0	33.3	87.5
Total	37.8	25.0	38.7	22.5		37.8	25.0	38.7	22.5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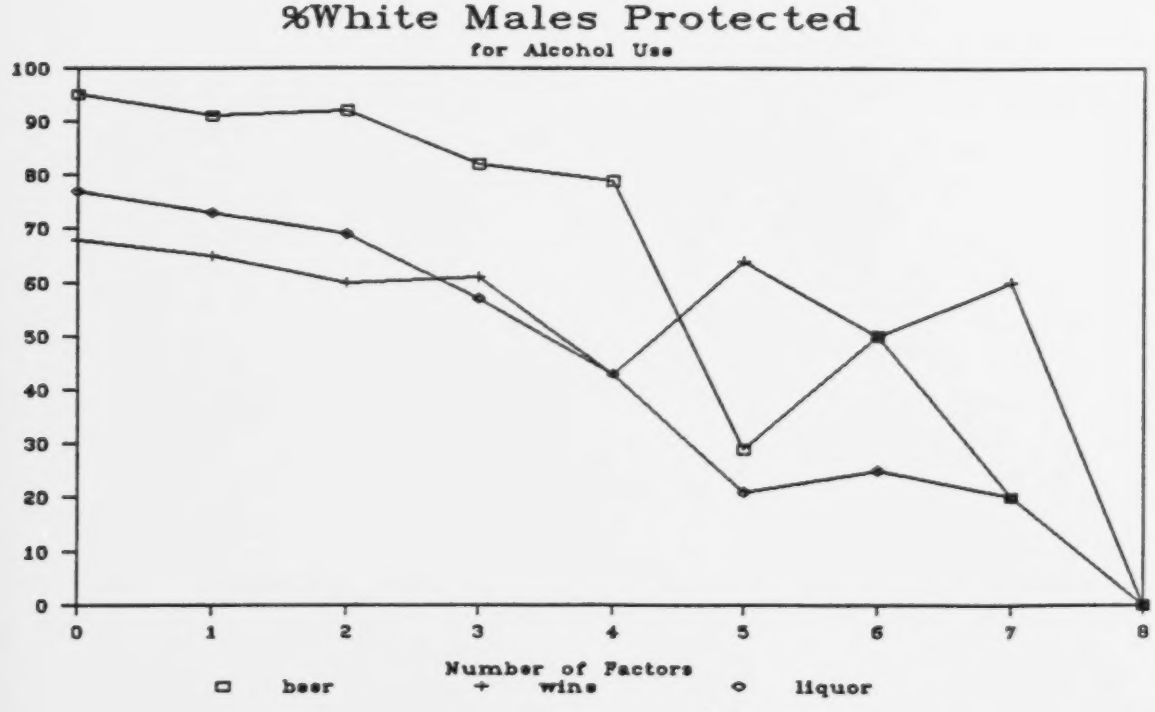
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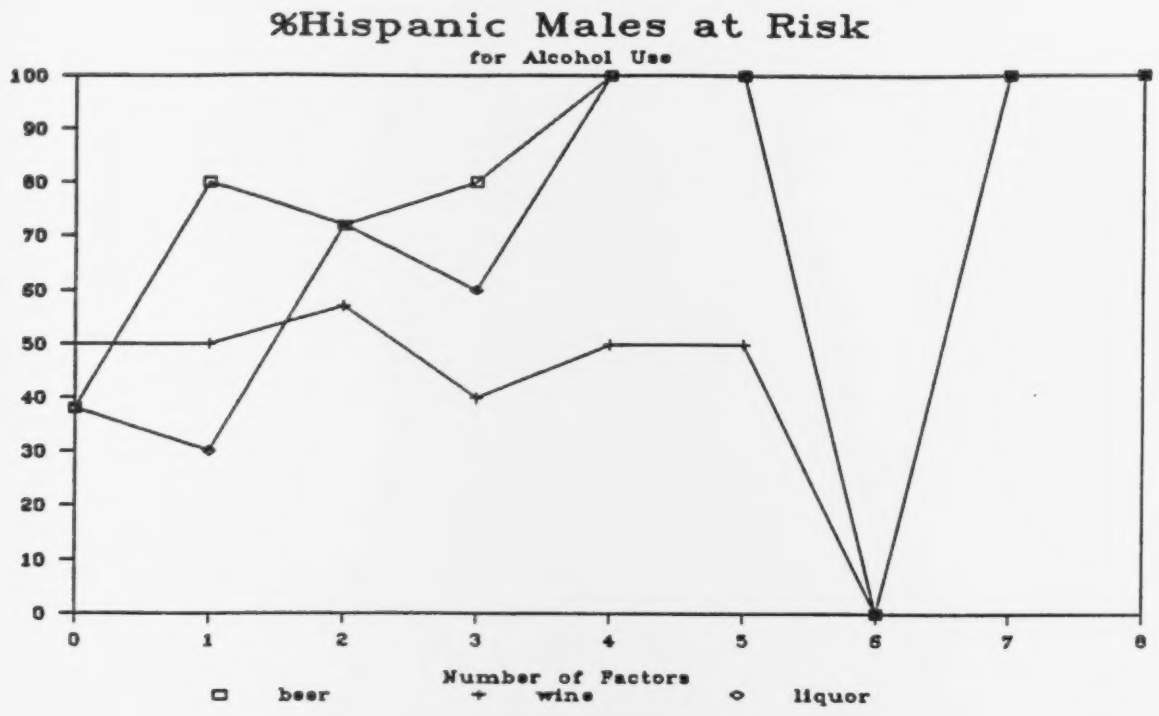
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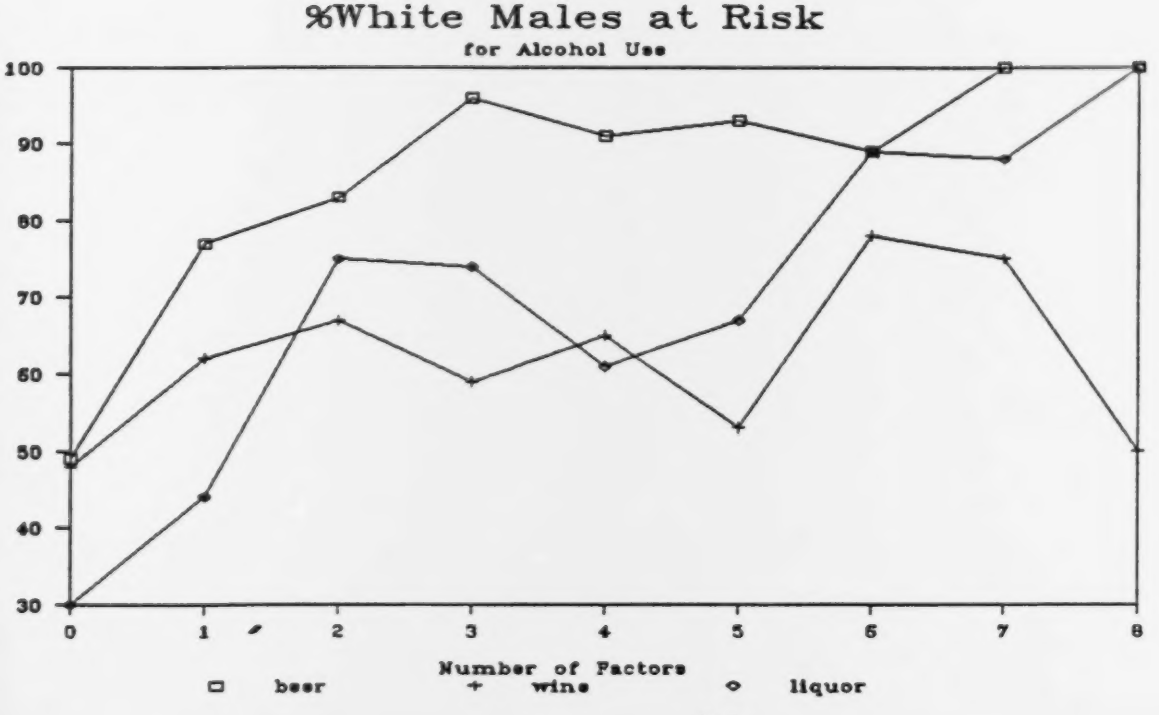
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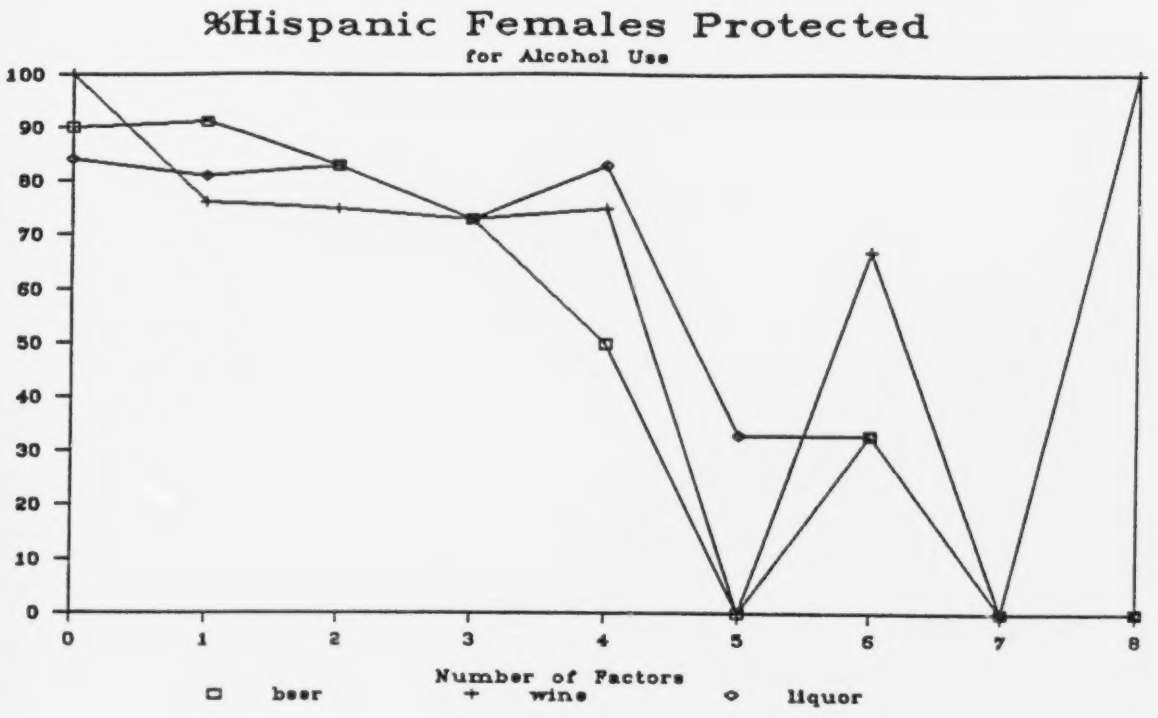
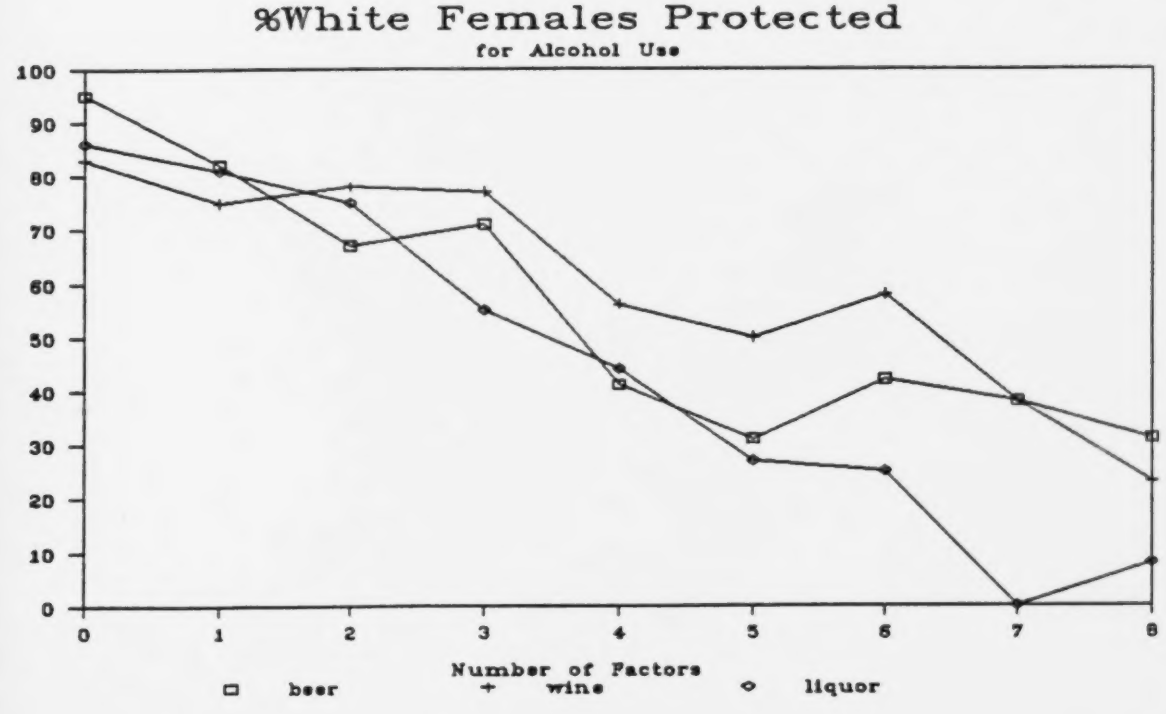
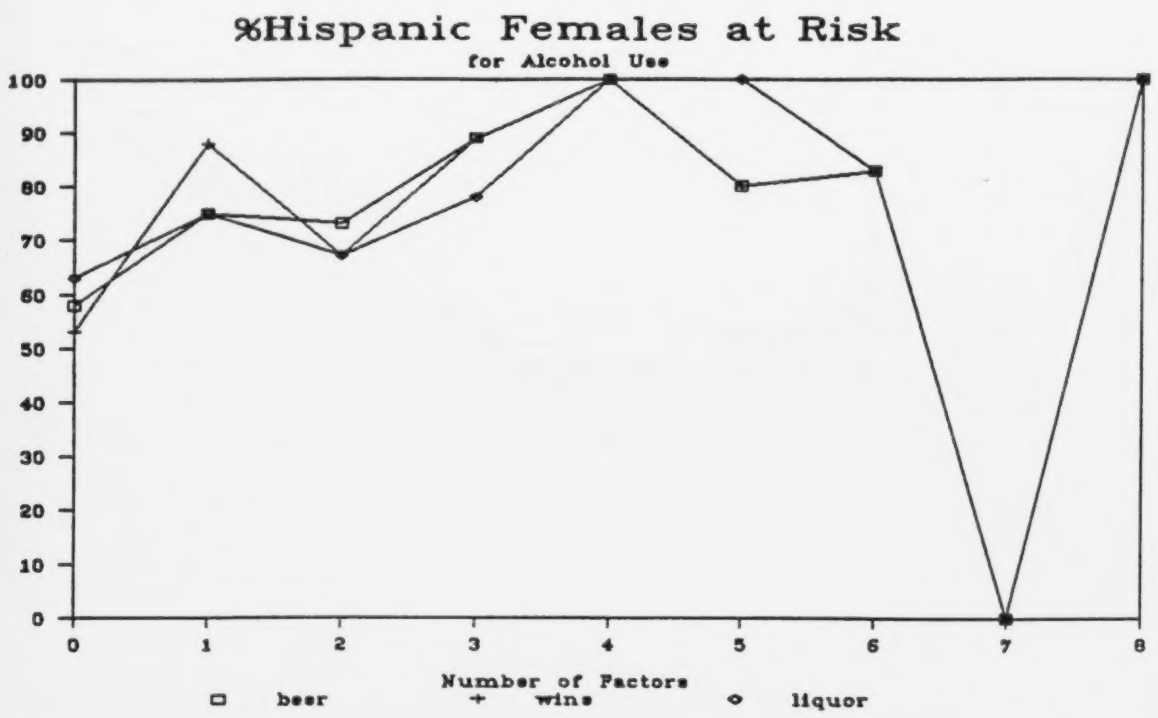
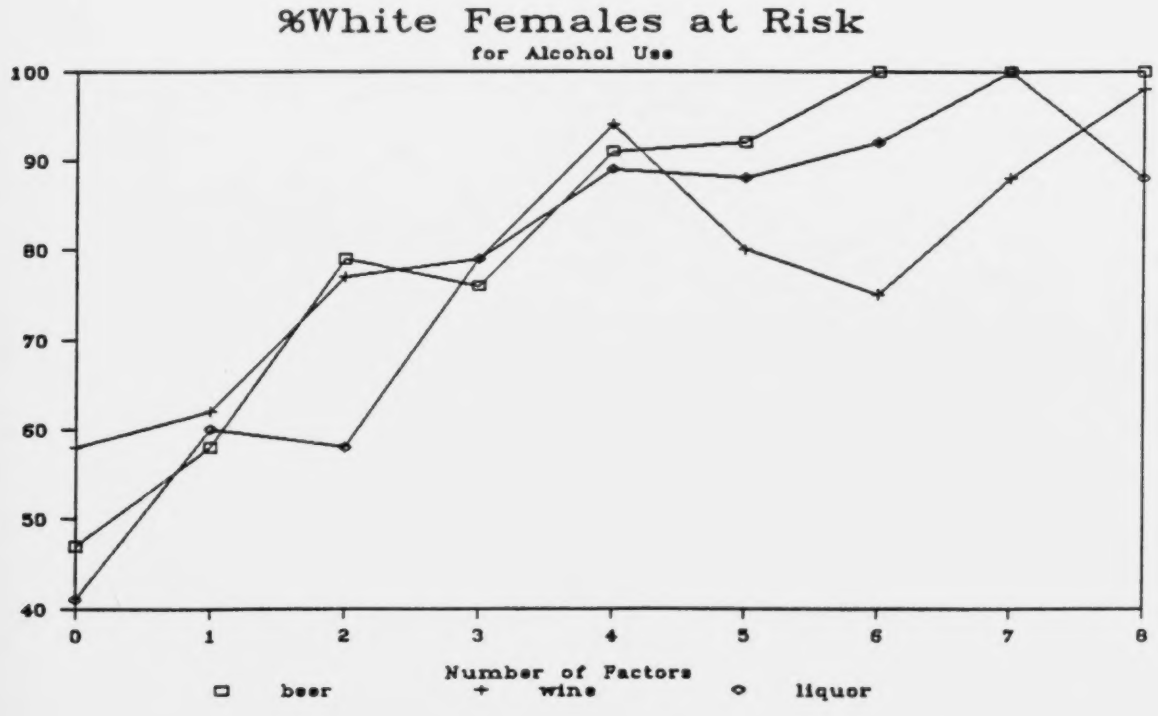
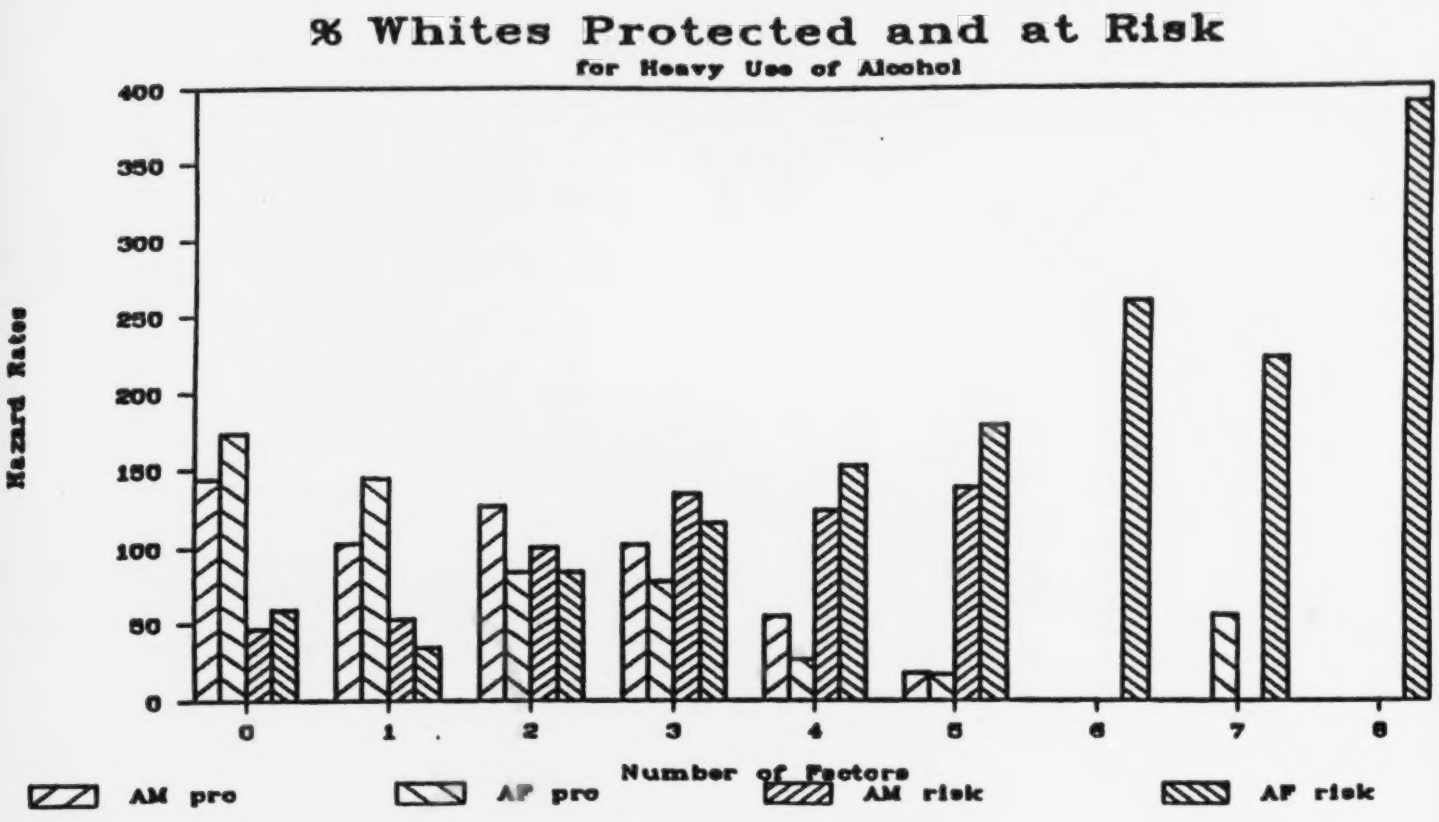
wine
liquor

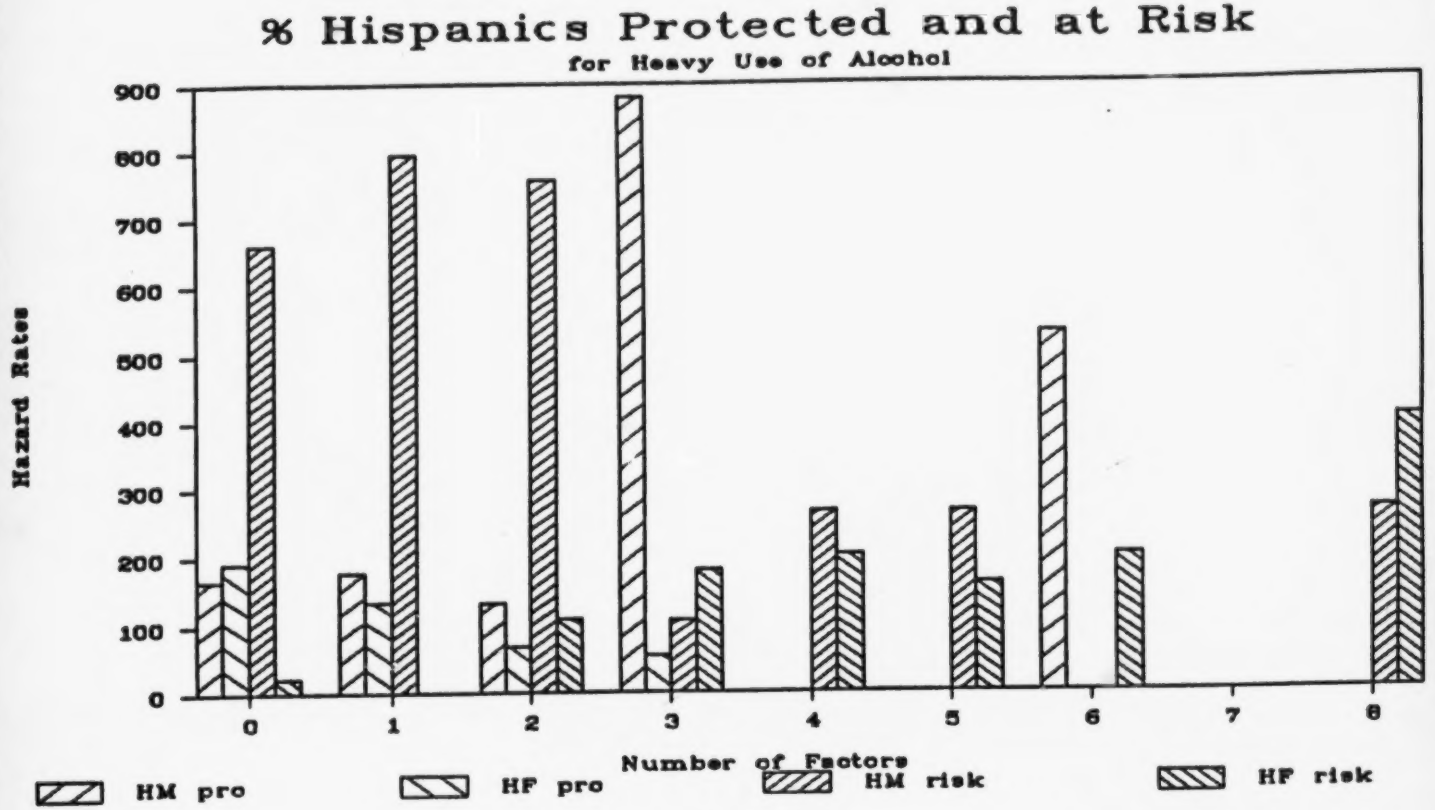

%Hispanic Females Protected
for Alcohol Use
100
90
80
70
60
50
40
30
20
10
0
0 1 2 3 4 5 6 7 8
Number of Factors
beer
wine
liquor


%White Females Protected
for Alcohol Use
100
90
80
70
60
50
40
30
20
10
0
0 1 2 3 4 5 6 7 8
Number of Factors
beer
wine
liquor


%Hispanic Females at Risk
for Alcohol Use
100
90
80
70
60
50
40
30
20
10
0
0
1
2
3
4
5
6
7
8
Number of Factors
beer
wine
liquor


%White Females at Risk
for Alcohol Use
100
90
80
70
60
50
40
0
1
2
3
4
5
6
7
8
Number of Factors
beer
wine
liquor


% Whites Protected and at Risk
for Heavy Use of Alcohol
Hazard Rates
400
350
300
250
200
150
100
50
0
0
1
2
3
4
5
6
7
8
Number of Factors
AM pro
AF pro
AM risk
AF risk


% Hispanics Protected and at Risk
for Heavy Use of Alcohol
Hazard Rates
900
800
700
600
500
400
300
200
100
0
0
1
2
3
4
5
6
7
8
Number of Factors
HM pro
HF pro
HM risk
HF risk

Risk/Protective Factors for Alcohol Use Among Hispanic and White Teenagers

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Risk/Protective Factors for Alcohol Use
Among Hispanic and White Teenagers

This study overcomes some problems with attempting to identify a single cause of changing patterns of substance use/abuse among women and ethnic minorities by considering a number of potential risk and protective factors. Data from White and Hispanic teens were collected on 12 factors associated with substance abuse and converted into a Protective Factor Index (PFI) and a Risk Factor Index (RFI). Across time, the PFI predicted frequency and quantity of alcoholic beverage use for White females. The RFI predicted quantity of alcohol use for Hispanic males and White females, and frequency of liquor use for White males.

Risk/Protective Factors for Alcohol Use Among Hispanic and White Teenagers

Changing alcohol and drug use patterns among women and ethnic minorities call attention to the importance of substance use research with this population. Recent analyses have found that rates of alcohol consumption among women are rising (Wilsnack, Wilsnack, & Klassen, 1984). In addition, Hispanics are over-represented in alcohol-related deaths and drunk driving arrests (Caetano, 1987).

Various studies have identified factors associated with drug use. Kandel's (1978) stage model of drug use and Jessor and Jessor's (1978) model of "problem behavior proneness" are relatively comprehensive but unable to incorporate the many factors associated with drug use. Bry, McKeon, and Pandina (1982) adopted an epidemiological model which considers the number of factors that places an individual at risk for illness. Rather than identifying a single cause of drug use, various factors are identified whose cumulative effects lead to substance abuse. Protective factors have been designated as those which are associated with lower drug use or better adjustment but only considered one or two factors (Brook, Whiteman, Gordon, & Brook, 1985; Brook, Whiteman, Gordon, & Cohen, 1986). Unlike these previous studies, we consider many more factors, distinguish between different substances, and create a protective factor index (which has not been done before). Finally, cross-sectional and longitudinal data are studied.

Data were collected from 117 Hispanic and 560 White

adolescents (grades 11, 12, and graduates) as the 5th year (fourth assessment point) in a longitudinal study of adolescent development and drug use. Frequency of use over the last six months was assessed for beer, wine, and liquor. The frequency of being "super high" and of being high at school was also assessed for these substances. A quantity for alcohol in general was also included. Fourteen factors were chosen for study based on previous research and on studies of Hispanic culture. Through multiple regression analyses of all factors with each of the frequency measures, the number of factors was reduced to twelve. For each variable distributuion, cutpoints were designated for protective and for risk factors (lower 20% and upper 20%). Although the cutpoints are theoretically based, they are also empirically driven based on subject data. For each variable, an individual was given either a score of one if the protective factor criterion was met or a score of zero if the criterion was not met. These scores were summed into a protective factor index (PFI) ranging from 0 to 12. Using the risk factor criterion for each variable, similar scoring and summing procedures yielded a risk factor index (RFI). Each index was truncated from 12 to >8 because so few subjects scored >8.

These data highlight some interesting similarities and differences between the sexes and between ethnicities (Table 1). The Hispanic females drank as frequently as did Hispanic males. This was also true of Whites. Whites drank beer more frequently than did Hispanics ($p<.05$) and females drank wine more frequently than did males ($p<.001$). No significant difference emerged among

groups with respect to frequency of liquor use. Males became "super high" more frequently on beer than did females, while females preferred wine ($p<.05$). Males also became high at school on beer more often than did females ($p<.001$) and high at school using alcohol more often than females ($p<.05$). The similarity between sexes in Hispanics may mean that these females' pattern of drinking is becoming more similar to that of males, but this cannot be said with certainty because of the small number of Hispanic males in the sample ($n=37$). Hispanic females were not frinking less than Hispanic males nor did they differ in how much they drank as compared to White females.

As Hispanics become more acculturated within the U.S., modern Hispanic females are presented with more opportunities to drink than those of past generations. Hispanic females appear to have modified the greater quantity of alcohol consumed on each occasion as compared to their male counterparts, a pattern that had been noted as typical of past generations of Hispanic women (Holck et al., 1984). Hispanic males, however, are still engaging in illicit behaviors and illicit substance use more often than Hispanic females.

The apparent convergence of drinking patterns among the sexes may be an example of dual role stress as described by Gomberg (1981). When women are confronted with the integration of both a typically masculine role (i.e. employment) and a typically feminine role (i.e. wife), stress results which may contribute to more drinking. With Hispanic women, level of acculturation introduces more complexity. A Hispana who is not

highly acculturated will be subject to dual role stress as she walks a fine line between two cultures: one which encourages a woman to assume traditionally masculine roles and one which does not. If this is the case, Hispanic females may begin to show higher frequency and/or of drinking as compared to White females.

The PFI and RFI affect different substances over time depending on the sex and ethnicity of the user (Tables 3-6). In the total group, neither the PFI nor RFI accounted for significant change in use of beer over time. However, the PFI was predictive of liquor use and general alcohol use over time. Both indices were useful for determining alcohol quantity in the future for the total group. When sex and ethnicity were considered, the PFI predicted alcohol quantity and frequency of use for all alcoholic beverages for White females but not for Hispanic females or males. The RFI was predictive of quantity of alcohol use for Hispanic males and White females, and also of White males' liquor use over time.

In conclusion, the PFI and RFI are useful for estimating current and future substance use. The PFI and RFI both predict alcohol quantity. The PFI is particularly predictive of alcohol use concurrently and across time. The implications for treatment are that enhancement of protective factors should have more of an impact upon alcohol use than the reduction of risk factors. However, the effects of both reducing risk and enhancing protection can be considered optimal. Protective and risk factors work differentially for different types of substance use.

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Table 1

Two-Way ANOVAs of Drug Use Measures for Sex by Ethnicity

	Hispanic		Whites		F-values		
Variable	Males	Females	Males	Females	Race	Sex	RxS
Frequency of use over the last six months							
Beer	2.84	2.84	3.52	2.88	4.01*	3.27	3.26
Wine	1.86	2.61	2.21	2.51	0.78	13.86***	2.61
Liquor	2.24	2.53	2.39	2.53	0.23	1.77	0.23
Alcohol	6.95	7.98	8.13	7.91	1.97	1.05	2.47
"Super High:"							
Beer	1.92	1.76	2.29	1.79	1.74	4.55*	1.24
Wine	1.24	1.48	1.36	1.50	0.61	4.04*	0.25
Liquor	1.65	1.84	1.80	1.76	0.08	0.37	0.83
Alcohol	4.81	5.08	5.45	5.05	0.95	0.04	1.08
High at school:							
Beer	1.59	1.18	1.46	1.19	0.58	17.13***	0.83
Wine	1.03	1.10	1.13	1.14	1.93	0.73	0.43
Liquor	1.32	1.18	1.26	1.19	0.17	2.63	0.35
Alcohol	3.95	3.45	3.84	3.51	0.02	5.84*	0.24
Alcohol Quantity	3.03	2.83	3.26	2.71	0.06	2.76	0.59

*p≤.05 **p≤.01 ***p≤.001

Table 2

Two-Way ANOVAs for the Cumulative Protective and Risk Indices

	Hispanic		Whites		F-values		
Index	Males	Females	Males	Females	Race	Sex	RxS
Protective factor index	2.81	1.94	2.14	2.32	0.42	2.37	5.65*
Risk factor index	2.14	2.28	2.68	2.17	0.87	0.63	1.93

*$p \leq .05$

Table 3

Multiple Regression Analyses of the PFI, the RFI, and Year 5 Alcohol Measures Predicting Year 9 Alcohol Use for the Total Sample

Year 9 Measure	PFI	RFI	Year 5 Measure	R^2
PFI and RFI				
Beer	-.05	-.01	.48***	.26***
Wine	-.12**	-.13	.36***	.15***
Liquor	-.11*	.02	.38***	.21***
Alcohol	-.11*	-.05	.47***	.26***
Alcohol Quantity	-.09*	.08*	.36***	.21***
PFI alone				
Beer	-.04		.48***	.26***
Wine	-.05		.34***	.13***
Liquor	-.12**		.39***	.21***
Alcohol	-.09*		.45***	.25***
Alcohol Quantity	-.12**		.38***	.21***
RFI alone				
Beer		.01	.50***	.26***
Wine		-.08	.38***	.14***
Liquor		.07	.41***	.20***
Alcohol		-.01	.51***	.25***
Alcohol Quantity		.12**	.39***	.21***

Note: The significance of R-squared is based on the F-value.
The significance of beta weights are based on the t-value.
***p≤.001 **p≤.01 *p≤.05 +p≤.10

Table 4

Multiple Regression Analyses of the PFI, RFI, and Year 5 Alcohol Measures Predicting Year 9 Alcohol Use for the Total Sample

	Males				Females			
	Betas				Betas			
Year 9 Measure	PFI	RFI	Year 5 Measure	R^2	PFI	RFI	Year 5 Measure	R^2
Total Group								
Beer	.05	.09	.54	.32***	-.14	-.09	.42	.22***
Wine	-.02	-.04	.51***	.25***	-.16**	-.12	.26***	.10***
Liquor	-.02	.15*	.44***	.29***	-.14**	-.02	.35	.18***
Alcohol	.05	.06	.62	.39***	-.17**	-.11	.41***	.22***
Alcohol Quantity	.01	.10	.42***	.21***	-.17**	.06	.31***	.21***
Hispanics								
Beer	.46	.27	.86***	.49***	.02	-.05	.61***	.34***
Wine	.33	.30	.59**	.35*	-.09	-.05	.33**	.13*
Liquor	.41	.29	.78***	.59***	-.06	-.05	.40***	.16*
Alcohol	.48	.37*	.81***	.62***	-.02	-.07	.52***	.26***
Alcohol Quantity	.37	.53*	.41	.33*	-.09	-.11	.34*	.12
Whites								
Beer	-.02	.05	.49***	.29***	-.19***	-.10	.39***	.21***
Wine	-.09	-.09	.52***	.28***	-.17**	-.14	.25***	.09***
Liquor	-.08	.12	.41***	.26***	-.17**	-.01	.33***	.19***
Alcohol	-.02	.01	.60***	.38***	-.21***	-.12	.38***	.22***
Alcohol Quantity	-.05	.02	.43***	.22***	-.18**	.10+	.31***	.25***

Note: The significance of R-squared is based on the F-value.
The significance of beta weights are based on the t-value.
***$p \leq .001$ **$p \leq .01$ *$p \leq .05$ +$p \leq .10$

Table 5

Multiple Regression Analyses of the PFI and Year 5 Alcohol Measures Predicting Year 9 Alcohol Use for the Total Sample

	Males			Females		
	Betas			Betas		
Year 9 Measure	PFI	Year 5 Measure	R^2	PFI	Year 5 Measure	R^2
Total Group						
Beer	.01	.56***	.31***	-.11*	.40***	.21***
Wine	.01	.50***	.25***	-.10*	.24***	.09***
Liquor	-.09	.48***	.27***	-.14**	.34***	.18***
Alcohol	-.03	.64***	.39***	-.13**	.37***	.21***
Alcohol Quantity	-.04	.43***	.20***	-.20***	.33***	.21***
Hispanics						
Beer	.37	.96***	.52***	.04	.60***	.33***
Wine	.15	.57**	.30*	-.07	.32**	.13*
Liquor	.31	.89***	.54***	-.04	.38***	.16**
Alcohol	.33	.92***	.54***	.00	.50***	.25***
Alcohol Quantity	.06	.43	.15	-.07	.29*	.11*
Whites						
Beer	-.04	.51***	.28***	-.15**	.36***	.20***
Wine	-.04	.51***	.27***	-.11*	.23***	.08***
Liquor	-.13+	.43***	.25***	-.17**	.33***	.19***
Alcohol	-.03	.60***	.38***	-.17**	.34***	.21***
Alcohol Quantity	-.06	.43***	.22***	-.22***	.34***	.24***

Note: The significance of R-squared is based on the F-value.
The significance of beta weights are based on the t-value.
***p≤.001 **p≤.01 *p≤.05 +p≤.10

Table 6

Multiple Regression Analyses of the RFI and Year 5 Alcohol Measures Predicting Year 9 Alcohol Use for the Total Sample

	Males			Females		
	Betas			Betas		
Year 9 Measure	RFI	Year 5 Measure	R^2	RFI	Year 5 Measure	R^2
Total Group						
Beer	.08	.51***	.32***	-.04	.47***	.20***
Wine	-.03	.51***	.25***	-.05	.29***	.08***
Liquor	.16*	.45***	.29***	.04	.39***	.17***
Alcohol	.04	.60***	.39***	-.05	.47***	.20***
Alcohol Quantity	.10**	.41***	.21***	.13**	.37***	.19***
Hispanics						
Beer	.16	.58**	.48**	-.05	.60***	.34***
Wine	.11	.51**	.28*	-.02	.36**	.12*
Liquor	.15	.61**	.50***	-.03	.41***	.16**
Alcohol	.21	.57**	.51***	-.07	.53***	.26***
Alcohol Quantity	.41*	.20	.28*	-.09	.38**	.11*
Whites						
Beer	.06	.50***	.29***	-.03	.45***	.19***
Wine	-.04	.53***	.27***	-.05	.28***	.07***
Liquor	.15*	.43***	.26***	.06	.38***	.17***
Alcohol	.02	.61***	.38***	-.04	.46***	.19***
Alcohol Quantity	.04	.45***	.22***	.17***	.37***	.23***

Note: The significance of R-squared is based on the F-value.
The significance of beta weights are based on the t-value.
***$p \leq .001$ **$p \leq .01$ *$p \leq .05$